

Look for these  
articles inside...  
Levee break  
creates  
accidental forest;  
can the process  
be replicated?  
Levee repair by  
slurry wall  
construction

Golden State

# FLOODLIGHT



California Floodplain Management Newsletter  
A publication of the Department of Water Resources



*We Shall Gather at the*

*by D.J. Waldie*

The budget that Gov. Gray Davis signed in June 2000 authorizes five projects along the neglected Los Angeles River - among them a new state park - that will connect a band of green that riverside cities, Los Angeles County, and a dozen non-profit organizations have already begun to draw along the river's banks. What had long been derided as a concrete tomb is now ready for a Lazarus-like rebirth.

The budget that allocated \$88.5 million for projects in the watershed of the Los Angeles River and the Rio Hondo, was made possible by the passage in March 2000 of Propositions' 12 and 13 park and clean water bonds. The funding includes:

\$45 million for the start of a 62-acre Los Angeles River state park on the east side of the Elysian Valley on part of the Union Pacific's former Taylor Yard;

\$5 million for a bikeway and hiking trails along the Tujunga Wash in Van Nuys and habitat restoration along a half-mile of the flood control channel;

\$5 million for an Elysian Valley Riverfront Park that will consolidate a belt of smaller parks (some hardly bigger than a house lot) from Atwater Village to the Arroyo Seco. These are linked by the city's \$2.6-million Elysian Valley Bikeway;

\$5 million to build a Confluence Park at the meeting of the river and the Arroyo Seco.

The arroyo's reengineering in 1997 as a naturalistically landscaped channel could be a model for rebuilding some San Fernando Valley stretches of the river. The new park would be a hub where bikeways up the arroyo to Pasadena and south through downtown Los Angeles will connect with the Blue Line light rail extension; and

\$2.4 million to expand Riverfront Park in tiny Maywood, one of the most densely settled cities in the state and the one with the least open space (less than 10 acres for a population of more than 36,000).

Upstream and down, city and county planners are tying small parks to a thread of bike paths to build the Los Angeles River Parkway, a name that deliberately recalls a monumental park plan proposed in 1930 by the famed landscape firms of Olmsted Brothers and Bartholomew Associates. The Olmsted/Bartholomew plan would have remade the river channel as a wide band of parks and wetlands from the San Fernando Valley to the ocean without the control of concrete. Some environmental advocates still dream of this unconstrained river, but it isn't possible today.

It has required a hard realism to build the small parks that are possible. Riverside cities and their non-profit agency partners are successfully learning how to build on the tainted ground of the industrial neighborhoods that overlook the channel along most of its 51-mile length. Over the past decade, they've pooled the available funding, made partners of the County Department of Public Works and even the Army Corps of Engineers, created the first small parks along the northern reach of the river, and added other parks along the river's southern reach.

These projects are as modest as the neighborhoods through which the river passes, but they are essential to bridging the gaps the river makes in the fabric of L.A. Think of the river we're remaking as the anti-free-way, not dispersing L.A. but pulling it together.

In Bell Gardens, a city with only two parks and a population of 100,000, city officials and the non-profit Trust for Public Land broke ground in March 2000 on another "brownfield" site for a pocket park and gateway to the county-maintained bikeway. The Trust plans a similar gateway park in the City of Bell.

In Studio City, despite NIMBYist\* fears of the kind of public who will use a public park, the gated riverbank will be made accessible, landscaped with native plants, and opened to the bikeway.

Along Compton Creek, one of only six locations in the flood control system without a concrete floor, the Mountains Recreation and Conservation Authority is using \$3 million in county recreation bonds to build a chain of small parks.

In Long Beach, a newly created Mountains and Rivers Conservancy has plans to build a bikeway with part of the \$15 million the conservancy has been allocated in state park bond funding.

In the prophetic words of the old hymn, we shall gather at the river. We have almost nowhere else to go in a built-out L.A. We shall gather at the river with all its flaws as a place and all our flaws as a people. We shall gather on the problematic banks of the Los Angeles River not to restore it to wild nature, which is no longer possible, but to restore it to ourselves.

Mr. D. J. Waldie is also the author of "Holy Land: A Suburban Memoir" and a city official in Lakewood, CA. Questions or comments about this article should be directed to Mr. Waldie at his e-mail: [dwaldie@lakewoodcity.org](mailto:dwaldie@lakewoodcity.org).

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\*Editors' note: NIMBY stands for the phrase: Not in **my** backyard! Or, "Yes, that's a fine idea, but put it someplace else where I don't have to look at it!"

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The purpose of this newsletter is to assist local communities in managing their floodplains and in meeting the Federal Emergency Management Agency requirements under the National Flood Insurance Program. This *free* publication is supported under a cooperative agreement with FEMA.

Readers are encouraged to submit reports or draft articles about their experiences with the administration and management of floodplains, the effects or prevention of floods, flooding and cleanup, public education or outreach efforts, or in related fields such as wetlands, storm water management, etc. Relevant photos, black & white or color, are especially welcome. Text or photos will *not* be returned unless specifically requested. Address material for publication to Ricardo Pineda or Maria Lorenzo-Lee, DWR, 1416 Ninth Street, Room 1623, Sacramento, CA 95814; FAX 916-653-3639.

Copies of the **Floodlight** are available to schools, libraries and interested individuals, as well as local community officials, professional floodplain managers and staff, and professionals in various related fields as wetlands, the environment, water engineering, etc. To add new names and addresses, change or correct mailing labels, or for additional copies to the same location, please contact Maria Lorenzo-Lee by e-mail to [mlorenzo@water.ca.gov](mailto:mlorenzo@water.ca.gov) or at the address above.

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# The Raising of Success Dam

## Development Of A Multipurpose Flood Control Project

by Ken Minn

Success Dam and Lake Success\* are a multipurpose dam and reservoir completed by the Corps of Engineers in 1961 to provide flood control and irrigation water storage. Located in the southeastern portion of the San Joaquin Valley, about 75 miles southeast of Fresno and 60 miles north of Bakersfield, the project area extends from Success Lake in the foothills six miles east of Porterville, to the Tulare lake bed southwest of Corcoran. The Tule River exits the foothill channel in an alluvial fan and onto the San Joaquin Valley floor, eventually reaching the Tulare lake bed. Project area elevations range from a maximum of 10,000 feet in the upper watershed to 550 feet at the dam, 450 feet at Porterville, and approximately 175 feet at the lowest point in the Tulare lake bed.

Success Dam is an earthfill dam 145 feet high. The original reservoir design capacity was 80,000 acre-feet with 75,000 acre-feet for flood control and irrigation water storage and 5,000 acre-feet for sediment storage. The spillway is an ungated, broad-crested weir which has a bottom length of 200 feet and a sill elevation of 652.5 feet. The 1.4 megawatt powerplant was retrofitted to Success Dam in 1990.

Flooding which can cause extensive damage to residences, valuable agricultural farmland and public facilities remains a major risk and concern to citizens living in the area downstream of Success Dam. As a result, a project has been recommended to raise Success Dam to provide additional freeboard and to pass the probable maximum flood. Additional storage capacity for Tule River flows would increase flood protection, irrigation water storage, hydropower production, and recreation in downstream areas in Porterville and the Tulare lakebed.

Economic development in the area is continuing and the demand for use of lands in the floodplain is increasing. At the same time, improvements in flood-prone locations continue to become ever more vulnerable to serious flood damage. Based on the channel capacities for the various reaches of the Tule River, floodplains were developed for flood frequencies of 80-year, 100-year and 500-year events. These floodplains were developed using detailed cross-sections and back-water analyses from below Success Dam to the Friant-Kern Canal. Floodplains below the Friant-Kern Canal to the Tulare Lake bed were developed using hydraulic analyses and historic flooding as a guide.

The problems, needs and desires of the local people in the area were translated into specific objectives to aid in the generation of several conceptual plans. Alternative measures were developed and evaluated to conform to the planning objectives. The planning objectives are to provide increased flood protection to urban and agricultural areas; to provide increased storage for Tule River irrigation water, incidental to flood control objective; to enhance storage space for sediment in the Lake Success; and to provide increased opportunities within the basin.

To accomplish the objectives, the National Economic Development plan was selected. It consists of raising the spillway and gross pool elevation and widening the spillway to safely pass the probable maximum flood. The spillway raise would increase the reservoir storage capacity from 82,300 to 110,300 acre-feet (an increase of 28,000 acre-feet), and the reservoir surface area from 2,400 acres to 3,120 acres. The gross pool would be used jointly for flood control and agricultural water supply storage. The project would increase flood protection for Porterville from a 1 in 50 chance to about a 1 in 100 chance of flooding in any given year. Flooding in the agricultural areas would also be minimized along the Tule River. It is estimated that the hydropower production at the exist-

ing hydropower plant would increase by 266-megawatt-hours per year on an average annual basis because of increased storage capacity and hydraulic head. The towers of existing 300 kV power lines traversing the reservoir on the west side are as low as 41 feet above current gross pool level. These transmission towers and the 11,800 feet of power lines they support must be raised to provide clearance required by the Public Utility Commission. The State Highway 190 bridge that crosses the south fork of the reservoir would be protected in-place.

The environmental impacts of the proposed project were evaluated. The project could affect land use, local socioeconomics,

recreation, esthetics, hazardous, toxic and radiological waste, transportation, noise levels, air and water quality, vegetation, fish and wildlife, endangered species, and cultural resources. The mitigation plan for the proposed project will consist of habitat restoration and other actions required to minimize or compensate for unavoidable effects of the project.

\*Lake Success presently has a surface area of 2,400 acres at a gross pool elevation of 652.5 feet. The main dam is 145 feet high and 3,404 feet long. The crest of the dam is at elevation 691.5 feet; the base is at elevation 546.5 feet.

## The Accidental Forest

### Functioning Floodplains & Practical Perspectives

by Earle Cummings

The Cosumnes River is frequently described as the last un-dammed river in California's Central Valley. That isn't true because Jenkinson Lake, on one of its major tributaries is certainly a dam, and the Omoichumnes-Hartnell Water District has a diversion dam near Rancho Murrieta. But there is comparatively little storage and the Cosumnes can certainly flood! In 1986 it overflowed Interstate 5 and Highway 99, and all the North-South trucking in the Central Valley had to be routed East through Sloughhouse on the Jackson Highway where the Dillard Road bridge remained open. Again in 1997, media attention on the operation of major rivers and reservoirs was redirected to the Cosumnes River when it again overflowed the flat lands and covered the main highways.

The volatility of the Cosumnes River has made farming on its floodplain a risky business. Because it has low-elevation water-

shed, the Cosumnes doesn't have a sustained summer snowmelt period. Major reservoirs on this river have been studied, but have never shown a favorable benefit-cost ratio. The lack of snowmelt and the variability of runoff made private and government investors reluctant to commit to a project. Indeed in most years, the runoff dwindles and disappears into the sandy bed of the river by July. Without sufficient runoff to support surface flow, farmers low on the river have to rely on wells and pumps to irrigate, and their crops and improvements are at risk of flooding in the winter and spring. The constraint of low income from farming (and lack of costly improvements) has long prevented reservoir developments that protect and serve the higher intensity of projects that occurs elsewhere in the Central Valley.

The resulting low intensity agriculture has left the Cosumnes River bottomlands relatively wild. In 1987, the Nature Conservancy screened the floor of the Central Valley for a natural community preserve that would protect valley oaks. The 800-acre Cosumnes River Preserve was dedicated in 1987 as the



The original Accidental Forest is that triangle of trees just right of center of photo in the foreground. The levee break, where it is hoped that a second accidental forest will occur, is to the left, about halfway between the Accidental Forest and the left side of the photo.

best valley oak stand remaining in the state. As the Nature Conservancy's scientists examined the trees and the floodplain processes that still prevailed on the Cosumnes, they recognized that there were unique and remarkable relationships between the flooding that occurred and the health of the floodplain forest.

The Conservancy property had been farmed and grazed for 150 years when the Conservancy acquired it. At first, they approached the management of the land with a spirit of optimistic volunteerism. Armies of volunteers were organized and guided to plant oaks and other native plants across the preserve's expanses. After five years of effort a few hundred acres with new trees were

beginning to develop. Some plants were growing, but the restoration goal was sufficiently ambitious that other approaches seemed to be needed. Rich Reiner was the area ecologist for the Conservancy at the time. As he compared the extent of forest restoration to the area that had not yet been restored, it became clear that on one part of the preserve, the forest was restoring itself. He observed that a stand of cottonwood trees had grown in an area where no planting had been done. This stand of cottonwoods not only grew, it thrived. A little historical sleuthing was in order.

An aerial photograph taken in 1985 proved to be the key. A levee along the river had broken and floodwater had poured across



the floodplain. The water spread a plume of sand across a wedge of cropland. The farmer on the parcel repaired the levee, but decided not to re-level the field because of the cost. Instead, he planted corn around the sand deposit. Willows and cottonwoods immediately reclaimed the bare sand. The cottonwoods, growing at 6 to 8 feet a year, soon attracted bird use, and scrub jays, bearing acorns from distant oaks, planted acorns in the accumulating soil. After five years, valley oaks began to become evident in the shelter of the cottonwoods. An "Accidental Forest" had been created. This natural, low-cost planting was so successful, the Conservancy staff began to contemplate duplicating the process by deliberately breaching a levee. Their hope was to allow the accidental forest to mature and then to repeat the establishment process along the levee system.

It must be said that the Cosumnes floodplain, in the vicinity of the Cosumnes Preserve, is owned by a large number of individual owners. The Nature Conservancy realized that it could not unilaterally restore its land to natural conditions. There are multiple levees that provide some level of protection for farmers and residents; and flood protection on this low-lying area is important to the neighbors. In concept, breaking a levee and providing a place for floodwaters to spread out, can lower the flood stage for areas downstream. The Conservancy made the point that their property would be the only property at increased risk if they degraded their own levee. After consultations and negotiations, the Conservancy developed a plan that met with general approval. In the winter of 1995-96, the Conservancy bulldozed 50 feet of levee on the preserve, downstream from the accidental forest. As expected, overflowing water deposited sand, seeds germinated, and seedlings grew. Then unexpectedly, a late season flood swept over the sandbar and stripped off the seedlings. But in the bared sand, new cottonwoods emerged from twigs and cuttings. The cuttings were beaver left-

overs. Beavers cut more branches than they consume, and the second flood redistributed sticks the beavers had cut. The accidental forest, which by now had substantial-sized trees, and a substantial beaver population, had provided the raw materials for vegetative propagation. Willows and cottonwoods, like most of their family, are adapted to floodplain conditions. Put them in moist soil, and their cuttings will sprout. The moist sand in the new sandbar was perfect for this mode of reproduction. The second forest took off.

As each forest grows, the overflow is gradually reduced. The floodplain behind a levee break gains elevation. Roots expand in the soil, leaves die and are added to the soil organic matter, additional sediment is trapped by dense understories of grasses and grass-like plants. Water velocity is slowed as water flows through the lace work of stems, and sediment formerly in suspension settles out. Earthworms, nourished by organic matter, till the soil and mix coarse and fine material together. Conditions for oak trees improve as the soil is enriched and becomes better drained. To sustain this process in a leveed system, a series of cuts is needed, rather than a general levee removal. There is an optimum point, however, where turbulent flow and sediment transport processes produce the greatest increase in the area that will grow a forest.

After the original accidental forest and its first copy were in place, another benefit of the floodplain being inundated was discovered. Native fish, which include Chinook salmon and species of native minnow, like the splittail and blackfish, were able to use the slower moving, nutrient-rich flooded areas to feed. They grew faster and survived better than when they were confined to the leveed channel.

The Nature Conservancy has hired a hydrologist who analyzed the effect of moving and setting back levees on the preserve. His analysis indicated the effects on other levees would be lowered stages. With this

information, the Conservancy was able to persuade regulatory agencies, including the Reclamation Board, Corps of Engineers, Fish and Game, Fish and Wildlife Service, and its neighbors that levee breakage and/or removal would not make flooding worse for other interests. The Corps contributed half of the funding for the most recent increment of levee breakage to learn more about the effects.

Breaking levees and levee removal may not be technically feasible on other streams where high-value encroachments already exist in a floodplain, but the Cosumnes River provides a location where the consequences of a course of action, that is otherwise hard to contemplate, can be learned. If in the future, we are faced with the choice of repairing a levee or restoring a floodplain, we can look at the "Accidental Forest" and the Cosumnes Preserve to see what that future might be.

## Mapping of the Floodplain, Where Are We Going?

by Tom Christensen

### Mapping of the floodplain

The State of California is fortunate to have a wide range of climatic, topographic, and geologic features, all of which result in varied and challenging floodplain issues. A report prepared by the Information Center for the Environment at U.C. Davis has identified 172,000 miles of rivers in the State with 70,000 miles of rivers downstream from dams. While not insurmountable, delineation of all of these systems would be a very formidable task.

Regulatory floodplain mapping on a countrywide basis was started by the Federal Insurance Administration in the late 1960's under the direction of the Department of Housing and Urban Development. In 1979 FIA became part of the Federal Emergency Management Agency. In the State of California it is estimated that FEMA has now mapped over 15,000 miles of stream systems by both detailed and approximate study methods. This still is less than 10 percent of all streams. Unfortunately, many of the areas mapped are now out of date, and FEMA's new mapping program budget is extremely limited.

To make matters worse, over the next 25 years the State is expected to have a 50 percent increase in population. The demand for development will put a heavy load on the remaining floodplains that are not mapped. Fortunately, not every stream reach needs to be delineated. It is currently estimated that about one-third of California's stream reaches are, or will be, experiencing development pressures within the next 25 years.

Without proper planning for this hidden (because it is often ignored) development impact, the burden on the community and the individual property owner will result in unnecessary damages to property and risk of loss of life, and increasing costs for emergency

ASFPM's Silver Anniversary  
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New Trends in  
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response needs and for flood protection.

Where are we going?

The Division of Flood Management of the Department of Water Resources is charged with protecting the citizens of California against loss of life and with reducing flood damage by encouraging sound land use practices. To do this we are faced with determining the potential impact of flooding on 50,000 to 60,000 miles of streams. Detailed study costs for these systems can exceed \$10,000 a mile. Obviously, this is not a reasonable alternative to solve a problem of this size within a reasonable time frame.

Strong efforts are now being focused on maximizing the extent of coverage and still providing quality floodplain mapping guidance. To make the most efficient use of funding, areas that have not been mapped but have potential for future growth will be evaluated by using approximate methods to determine potential 100-year floodplain boundaries for both riverine and alluvial fan areas. These studies can be performed for as little as \$200 a mile, allowing considerably more flood hazard areas to be identified for the same investment. At the request of local communities active alluvial fans may eventually be identified as regulatory floodways. This will provide communities with a regulatory resource for review of development in areas previously difficult to enforce.

The floodplain studies are being performed by all four DWR Districts, the three Corps of Engineers districts in California, by A&E\* contracts, and we hope that in the near future, by other agencies such as NRCS.\*\* Within 12 months, initial mapping products will be available for presentation on the DWR web page. These products will be available for use by local communities as well as other State and federal agencies.

The costs to prepare future detailed studies will not be borne entirely by the State or federal government, but will be contributed

to by the developer or local community on an as needed basis for any area within an identified flood hazard area. A supportable alternative is that communities encourage new development to be located outside of identified flood hazard areas. The State will continue to monitor local development patterns, and to assist communities by providing mapping studies and by supporting some detailed studies for crucial floodplain evaluations.

\*[A&E: architectural and engineering]

\*\* [NRCS: Natural Resources Conservation Service]

## Centralized FEMA Map Assistance Center

To assist FEMA in responding to the enormous volume of telephone inquiries concerning the National Flood Insurance Program maps, a toll-free telephone response service center known as FEMA Map Assistance Center [FMAC] was created in January 1999. The FMAC has been operated out of two Map Coordination Contractors' centers. One center is at Dewberry & Davis serving FEMA Regions I-V; and the second is at Michael Baker Jr., Inc., serving FEMA Regions VI-X.

The toll-free number for Region IX, is 1-877-336-2627.



Photo by Corps of Engineers (USACE) shows the levee trench being backfilled after the pouring of the slurry mixture was completed.

## American River Slurry Walls:

Wall Helps Keep State Capital Dry  
by Dan Yamanaka

An innovative method to increase flood protection for California's State Capital is currently being constructed in cooperation with a number of federal, state, and local agencies. Cement slurry cutoff walls are being constructed in the lower American River levees to strengthen the levees and provide Sacramento with increased flood protection.

In 1996, Congress authorized the American River Watershed (Common Features) Project as the first step towards increasing the level of flood protection for the City of Sacramento. The Common Features Project consists of those features that were common to each of the alternative plans evaluated in the Supplemental Information Report and

Environmental Impact Statement -- Environmental Impact Report for the American River Watershed released in March 1996. Slurry cutoff walls along approximately 20 miles of both the north and south levees of the lower American River are one feature of the \$68 million construction project.

The slurry walls are being designed and constructed by the U.S. Army Corps of Engineers with the support of The Reclamation Board and the Sacramento Area Flood Control Agency. Slurry walls are designed to increase the stability of the levees by reducing the seepage of water through and under the levee that occurs during flood stages in the American River. The slurry wall depth varies between 40 and 80 feet depending on the geotechnical conditions of the levee foundation. Ideally, the slurry wall ties into a clay layer or other impervious foundation layer to

effectively cut off the “through-levee” seepage and “under-levee” seepage.

Construction of the slurry wall is accomplished by excavating a trench approximately 24 to 48 inches wide through the center of the levee and its foundation. The trench soils are then hauled to a batch plant and mixed with cement, bentonite (clay material) and water to make the “slurry.” A dilute water and bentonite solution is pumped into the trench to prevent the trench walls from sloughing or collapsing. The cement slurry is then pumped or hauled back and placed in the trench, replacing the dilute solution. The cement slurry hardens to form an impermeable wall. The slurry wall, specified to have a compressive strength between 15 and 200 pounds per square inch, has an objective of in-place permeability of  $5 \times 10^{-7}$  centimeters per second.

Slurry wall construction on the north levee between Howe and Watt Avenues began in August, 1998 and was completed in December, 1998. Construction of the north levee slurry wall continued in 1999 and was completed this past year (2000). Meanwhile, construction of the south levee slurry wall started in June, 2000 and is scheduled for completion November 2001. To date, approximately 13 miles of slurry wall have been constructed. The remaining 6 miles will be completed during the 2001 and 2002 construction seasons, i.e. April 15 through October 31.

In several locations along the levee, overhead obstructions or large, deeply buried utility lines prohibit the use of traditional slurry wall construction methods. Instead, a different method called jet grouting will be used at these locations to close the gaps in the slurry walls. The Corps of Engineers is constructing a test section to determine the effectiveness of the jet grouting method and establishing the procedure and material specifications to be used. Jet grouting will take place during the 2001 and 2002 construction seasons.

## Fusegate Spillway

by DFM Staff

A fusegate spillway design patented by Hydroplus, Inc. of France is planned for installation at Terminus Dam, Lake Kaweah in Tulare County, by the U. S. Army Corps of Engineers in partnership with The Reclamation Board of the State of California and the Kaweah Delta Water Conservation District. Terminus Dam, originally constructed by the U.S. Army Corps of Engineers in 1962, is located on the Kaweah River about 20 miles east of the City of Visalia in the foothills of the Sierra Nevada mountains. It was originally constructed with a storage capacity of 150,000 acre-feet and is operated by the U.S. Army Corps of Engineers.

This project to increase reservoir storage for flood control and agricultural water supply storage, as authorized by Congress in 1996, called for raising the spillway of the dam by 21 feet from elevation 694 to 715. The authorized project design called for constructing a 21 feet high concrete ogee across a spillway widened from the existing 307 feet to 455 feet, to increase the reservoir storage capacity by 42,500 acre-feet for flood control and water supply storage.

During subsequent post-authorization engineering studies, the Corps found that the cost for widening the spillway was underestimated. The post-authorization studies indicated that widening the spillway would require blasting and ripping versus ripping alone in the original estimate, at a much higher cost. In an effort to reduce the cost associated with widening the spillway, alternatives were investigated. The fusegates, broad crested weir, ogee weir, labyrinth weir, and rubber dams alternatives were investigated. The evaluation of alternatives favored the fusegate design which was found to satisfy hydraulic requirements.

The fusegate design results in a slight reduction of flood control benefits at a much lower cost than the authorized ogee spillway design. It was estimated that the fusegate

design would result in a cost savings of over \$20 million dollars. The fusegates, estimated to cost less than \$9 million, consist of six fusegates to be set in the existing spillway opening with concrete overflow sections, broad crested weirs at elevation 715.0, filling the gap between the fusegates and the side walls of the existing spillway.

The series of six fusegates are designed to tip in sequence at preset water surface elevations. The tipping of each fusegate is dependent upon the amount of head and ballast provided for each gate. For this design the first fusegate is expected to tip during an approximate 400-year flood event; the second, will tip with the approximate 500-year event, and the last three fusegates tip at the 1000-year event. This sequence of tipping would allow the probable maximum flood to be passed with sufficient freeboard on the dam. Once a fusegate tips, it is expected to topple down the spillway. Therefore once tipped [and toppled] a fusegate will have to be replaced with the construction of a new fusegate. The reservoir could not be filled above the sill of the fusegate at about elevation 694 until the tipped fusegates are reconstructed.

The fusegate spillway operates as a labyrinth weir divided into segments or individual "fusegates". Each of the six fusegates sits on a concrete base and remains in place only by gravity and concrete blocks that prevent sliding in the downstream and side directions. When the overtopping flow reaches the selected design pool elevation, the fusegate will tip backwards and tumble downstream, thus increasing the capacity of the spillway to pass the remainder of the flood. The tipping is initiated by water entering the base chamber of the fusegate by way of an intake well, set to the design elevation. Once water enters the base chamber, uplift pressure rapidly increases, causing the fusegate to pivot about the concrete blocks and rotate downstream.

The amount of ballast in each fusegate and the elevation of the intake well determine the pool elevation at which a fusegate will tip, that is, rotate downstream.

Under a contract with the Corps, the Utah Water Research Laboratory of Utah State University conducted tests on physical models of the proposed fusegate. The purpose was to study the design, construction and operation concerns. The model study was set up to be completely functional and operated in the same manner as the prototype. The model test included hydraulic analysis and fusegate operations. The model had a maximum prototype flow of 300,000 cubic feet per second. The tests were conducted in several phases and modifications were made in the configuration before final tests were initiated. Tests were conducted on conditions that could possibly be encountered with the prototype in operation.

Congratulations to these  
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Red Bluff, CA

Lindsay, Stephen, CFM,  
San Diego, CA

Owens, Bill, CFM,  
Sacramento, CA

Smith, Carlos, CFM,  
Sacramento, CA

Rezakhani, Massoud, CFM  
Scottsdale, AZ

# Multi-Objective Floodplain Management Plans

A Framework for Assessing the  
Benefits and Costs -- Update

by Stephen W. Cowdin

In 1997, the California Department of Water Resources was awarded an EPA Wetlands Protection Development Grant with the goal of developing strategies for encouraging local governments to implement an improved multi-objective approach to floodplain management on a watershed basis. A key part of the study is the development of an economic framework for estimating the benefits and costs of multi-objective floodplain management plans. This economic framework will provide guidance on a number of significant topics.

First, this framework will help the analyst better understand the complex relationships between floodplain functions and values. Understanding these relationships is crucial for identifying and valuing societal and environmental benefits such as flow management, water supply, water quality, soil quality, air quality, and habitat protection. Second, the framework will provide practical information concerning the economic methods for valuing these benefits. Finally, the framework will provide guidance for adapting the benefit and cost analysis to the Federal Principles and Guidelines and Corps' planning guidance, which is critical for agencies seeking federal funding assistance.

Through a series of four draft reports, this study develops a framework for estimating the benefits and costs of multi-objective approaches to floodplain management on a watershed basis. The first report *Natural Floodplain Functions and Societal Values* identifies the functions of natural floodplains and their associated societal values and provides monetary examples from other studies. Understanding these functions and how alternative floodplain management proposals

affect them is a critical step in performing a multi-objective evaluation. The second report *Nonmarket Evaluation Techniques* discusses the advantages and disadvantages of various nonmarket economic evaluation techniques that can be used to estimate environmental benefits and costs as well as providing examples from other studies.

The third report *Middle Creek Restoration Project Case Study: Benefit and Cost Analysis* is a case study of the Corps of Engineers' proposed Middle Creek habitat restoration project at Clear Lake in northern California. Potential on-site benefits include restored wetland and riparian habitat as well as removing agricultural and rural residential uses within the floodplain which are subject to an increasing flood threat. The project is also expected to improve water quality within Clear Lake, with potential recreational benefits.

The fourth and last report develops the conceptual benefit and cost framework and links information from all of the reports. Adapted from work by Maynard M. Hufschmidt and others, it includes not only the traditional benefits and costs, but also shows how environmental effects can be addressed--in this case, those related to floodplain functions. A suggested format for displaying benefits and costs for alternative floodplain management plans is provided which illustrates the land use trade-offs among alternative plans.

Finalizing these four reports has been held up to incorporate concepts and techniques learned from the Sacramento-San Joaquin River Basin Comprehensive Study. Results from these economic reports eventually will be incorporated into new NFIP workshops being developed by the Department of Water Resources. Those workshops will focus on the preparation of multi-objective and watershed-based floodplain management plans.

# FMA Update: Future Forecast!

by Laura Hromadka\*

Exciting things are happening!

FMA joined with the New Mexico Floodplain Management Association and the Association of State Floodplain Managers to sponsor the Arid Regions Conference held in Albuquerque, New Mexico, February 21-23, 2001. This conference focused upon "The State of Floodplain Management in Arid Regions". In particular, the focus was on alluvial fan impacts, erosion, land subsidence and sedimentation, and the FEMA Map Modernization Program.

Our own **FMA Spring Conference will be held March 13-15, 2001 in San Diego, California**, at the Bahia Hotel on the bay. The focus of this conference is "Regulations, Codes and Floodplain Management," and will concentrate particularly upon compliance with the regulations and codes floodplain managers and water resources professionals deal with on a daily basis. The program will include:  
March 13, Tuesday

Substantial Improvement/Substantial Damage (DWR); New Elevation Certificate (DWR); and Certified Floodplain Managers Exam. Exhibit room will be open throughout conference.

March 14, Wednesday

AM: International Building Code (Rebecca Quinn/Chris Barkley); Water Quality Workshop (Moderator, Mary Jane Forster, invited)  
PM: Urban Stream Restoration Field Trip (Jon Walters); Today's Environmental Process (Moderator, Joe Hill), and Welcome Reception.

March 15, Thursday

Plenary Session: Guest speakers, Program Chair Iovanka Todt; Luncheon Speaker: John Robertus, County of San Diego; Paper presentations; concurrent break-out sessions.  
Evening: Dinner Cruise.

March 16, Friday

Paper presentations; concurrent break-out sessions; end at noon.

**Our Fall, 2001 conference** will be held at Caesar's Lake Tahoe, September 23-26, 2001. The focus will be "Water Quality and Floodplain Management - a Concept Whose Time has Come". Subtopic themes will include lake management, multi-objective management, and interagency coordination. Exploration of participation in policy-setting committees regarding public involvement programs, the CalFed program, water quality, and other topics will offer opportunities for our members to contribute and enhance the profession in a leadership role.

## **What you should know about the FMA!**

The Floodplain Management Association is an educational, not for profit association. Our mission is to promote flood safety through education. The FMA currently has approximately 420 members, located in eight different states and three countries, with about 80% of our membership in California. Nevada and Arizona make up most of the rest of our membership, so we tend to regard ourselves as a western states group for now, although we maintain a national perspective on floodplain management. About 60% of our membership is composed of governmental agency staff members, 35% from the private engineering sector, and 5% from floodplain-related vendors.

We publish two educational documents on a regular basis. The bimonthly FMA News is an informative newsletter about current floodplain management developments. The newly established *Journal of Floodplain Management* is a professional, peer-reviewed journal, published quarterly, which emphasizes matters relevant to practicing floodplain managers, particularly actual experiences our members have dealt with, both successful and not so successful. This is the only journal available focusing on practical applications to floodplain issues.

Our website: <http://www.floodplain.org>, is well-regarded and informative, and offers our organizational members, e.g. FEMA, the opportunity to link their sites to ours.

Interested in more information?

Please call us! The telephone number is 949-766-8112. To reach the FMA by e-mail, address [fmalaura@pacbell.net](mailto:fmalaura@pacbell.net), or write us at P.O. Box 2972, Mission Viejo, CA 92692-0972. We look forward to hearing from you and involving you in local floodplain perspectives!

\*Executive Director, Floodplain Management Association, (FMA)

## New Chief Engineer for Reclamation Board



Stephen Bradley was appointed as Chief Engineer to The Reclamation Board effective September 21, 2000. The Reclamation Board is a seven member, Governor-appointed board with flood control jurisdiction over lands within the Central Valley of California.

Steve's career with the State of California began in February 1999 with the Department of Water Resources in the South Delta Management Section of the Office of State Water Project Planning. Prior to joining the

State, Steve had more than 20 years of varied experience in water resources engineering and flood control in California. His previous experience included 10 years as a senior water resources engineer and project manager with Boyle Engineering Corporation, 9 years as a hydraulic engineer with the U.S. Bureau of Reclamation, and 1 year as a design engineer with the U.S. Fish and Wildlife Service.

Steve's primary technical expertise is in the fields of hydrology and hydraulics and his in-depth knowledge and understanding of water distribution and flood control systems in the Central Valley has proven valuable in providing technical advice and recommendations on flood control issues to The Reclamation Board.

Steve received his BS in Civil Engineering from the University of Colorado in 1978 and is a registered Professional Civil Engineer in California. He has been active in the Floodplain Management Association where he served as a member of the board of directors for five years and as chair of the organization in 1997.

Steve is the father of two children, a daughter and a son who occupy most of his free time. Steve enjoys woodworking, sailing, and fly-fishing.

## New Faces... in Floodplain Management, HQ:

The Floodplain Management Branch headquarters staff has an "old-time" new face as one of the Branch Section Chiefs. Effective June 1, 2000 **Bill Hom** transferred to Sacramento to become Chief of the Floodplain Assistance and Outreach Section.

Bill spent his first 25 years with DWR in the Southern District office in Southern California - the last 11 years as Chief of the Flood





Bill Hom with map of Sacramento River Delta in background.



Millicent "Millie" Hocking

plain Management and Assistance Section. This work involved him in conducting Community Assistance Visits and other floodplain management programs, so the move professionally was an easy one. Bill says, "I enjoy working with local communities to help them to develop a sound and effective floodplain management program." Bill is dedicated to his work and enthusiastic about his transfer and new responsibilities. (He also confesses that he is happy to be living in Northern California again!) Bill is a pleasure to work with and we're glad to have him as a member of the FPM Branch.

Bill received a BS degree in Civil Engineering from San Jose State University in 1974. He's a registered Professional Civil Engineer in California and a member of the Floodplain Management Association. Bill enjoys outdoor activities such as hiking, biking and traveling. He's married and is the father of a son - a junior in college, and a daughter - a sophomore in high school.

... & in the Districts:

**Millicent** (also know as Millie) **Hocking** began work with DWR last June as an Engineer, W.R. in our Northern District's Flood Management and Hydrology Section, Water Management Branch. Her current assignment includes surveying and hydraulic modeling for floodplain mapping studies and working with Kris Kingsley and Andy Corry on FEMA's Community Assistance Program.

Millie first achieved an Associate Science degree from College of the Siskiyous and then graduated in May 2000 from Humboldt State University with a BS degree in Environmental Resources Engineering. She now plans to take the Professional Engineering exam in the summer of 2002.

On the personal side she enjoys hiking, camping, skiing, biking and ballet, but is happiest when traveling to foreign ports. Millie took the first of which she expects will be many trips this year, visiting the Mediterranean area including Greece, Italy, France and Spain. Next year she plans to visit South America or New Zealand. She is also involved in the Department's mentor program through the Tehama County Office of Education.

Editor's Note: The next several pages contain reprints from other publications that we believe are of importance to those concerned with floodplains and their administration.

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## New International Building Codes & the NFIP

by Rebecca Quinn, RCQuinn Consulting, Inc.\*

Most communities that participate in the National Flood Insurance Program do so through "stand-alone" ordinances that typically are administered by a planning office. The best way to achieve one of the NFIP's objectives - guiding development away from flood-prone areas - is through planning and zoning. However, once the decision to build in a floodplain is made, then managing flood hazards involves designing and building for the anticipated conditions. And that involves the engineer, the architect, and the building official working together to produce a properly elevated structure with protected service equipment and flood-resistant materials.

The three major building code organizations, working through the International Code Council, have developed the International Code Series (I-Codes\*\*). Due to the coordinated efforts of the Federal Emergency Management Agency and the American Society of Civil Engineers, for the first time, a model building code includes provisions that are fully consistent with the National Flood Insurance Program. Communities now can use the I-Codes to fulfill their commitment to the NFIP.

To help building officials and floodplain managers, a new guidance publication is now available to explain how the NFIP and the I-Codes are related. Prepared with support from FEMA, "Reducing Flood Losses through the International Code Series: Meeting the Requirements of the National Flood Insurance Program" includes work sheets, an overview

(continued on page 18, please see BUILDING CODES)

## The California Perspective

The 2000 version of the International Code Series, published in May 2000, is being considered for adoption by states and communities across the nation. The 2000 International Building Code was created to standardize the building safety system throughout the United States. The organizations that publish the IBC have over 200 years of experience in developing codes, and their codes are being used in 48 states.

The Uniform Building Code, published by the International Conference of Building Officials, has been used in California since 1927. The ICBO had hoped that California would join the rest of the nation in adopting the latest improvements in building safety provisions of the IBC. On October 25, 2000, the California Building Standards Commission voted **not** to adopt the 2000 International Building Code, but to remain on the now outdated 1997 UBC for another three years. If implemented, this action could leave California building safety regulations out of date for the coming three years. It could also mean that the seismic provisions of the 1997 UBC could be six years out of date before the Commission again acts to update its codes. The Commission made exceptions, though, to move to the 1999 National Electrical Code, and the 2000 Uniform Fire, Plumbing, and Mechanical Codes.

This action went against the recommendation of a committee of experts that the CBSC itself created known as the "2000 Code Partnership Committee". This committee consisted of over 120 representatives of industry

(continued on page 18, please see PERSPECTIVE)

of the NFIP, references, crosswalks, and a summary of the implications of adopting the I-Codes. A work sheet to assess the community's current approach to managing floodplains is included. Another work sheet outlines suggested decision items and topics to be discussed during coordination meetings with other agencies in the community to decide how best to integrate floodplain management with the building safety department.

The publication also outlines implications of adopting the flood-resistant provisions of the I-Codes and offers suggestions for options to modify the codes to incorporate higher standards. There is also a chapter outlining the various responsibilities a community accepts when it joins the NFIP, including record keeping, evaluating certain floodplain impacts, map-related duties, collection of certain certifications, and inspections.

With respect to the I-Codes themselves, the publication includes two detailed crosswalks comparing excerpts from the IBC, one of flood-resistant provisions found primarily in Section 1612, and the other in Appendix G that includes the non-building provisions of the NFIP. In the International Residential Code, most of the flood provisions are found in Section 327.

\*[Reprinted from ASFPM's News & Views, August 2000.]

\*\*[The phrase, "I-Codes" is a registered Trademark; the initials, "IBC" are registered; and the phrase, "International Residential Code" is trademarked.]

Abbreviations used only in this article and accompanying side bar:

- IBC - International Building Code
- UBC - Uniform Building Code
- ICBO - International Conference of Building Officials
- CBSC - California Building Standards Commission

and governmental agencies, who collectively invested thousands of hours over an 18-month period in studying all the issues and developing recommendations, which the CBSC action now sets aside. The contention that the IBC represents a reduction in fire safety requirements from the UBC was strongly disputed by ICBO representatives, and by building and fire officials who said that the issues of safety and coordination had been addressed.

Support for the IBC came from Professional Associations representing Structural and Civil Engineers, Architects, Interior Designers, Building Owners and Managers, and many local officials who expressed concern that the Commission's action would cause the State of California to lose its historical role as a national leader in building safety regulations. The President of the ICBO has urged that those who share this concern to ask the CBSC to reverse their recent action and to adopt the latest building safety requirements. For more information contact Roy Fewell, ICBO, Vice President of Governmental Affairs, phone 562-699-0541 ext. 3225, or e-mail [fewell@icbo.org](mailto:fewell@icbo.org).

## How Does Your Community Rate for Premium Discounts?\*

The Community Rating System was implemented by the Federal Insurance Agency in 1990 to recognize and encourage community floodplain management activities that go beyond minimum NFIP requirements. When communities engage in one or more of the 18 recognized sets of activities that decrease exposure to flood damage, local property owners receive reductions in their annual insurance premiums. The amount of premium reduction depends on how many and what type of activities the community undertakes. (For example: two communities have engaged in so many local outreach, mitigation, and educational activities that they have decreased flood insurance premiums by 25% for their property owners - an annual savings of more than \$1 million for flood insurance policyholders in one of those communities, Sanibel Island, Florida.)

The three primary goals of the CRS are: to reduce bodily injury and property loss due to flooding; to facilitate more accurate rating of a community's exposure to flooding; and to raise everyone's consciousness that reasonably priced flood insurance is available to help Americans rebuild their lives after a flood without having to take out a loan or burden the taxpayers by getting an outright grant.

When the CRS first became available, 300 communities signed on; since 1990 that number has tripled; today more than 900 CRS communities are reaping significant flood insurance premium discounts for their property owners. CRS communities collectively save their residents more than \$50 million in premiums each year. Although they are only 5% of the 19,000 communities participating in the NFIP, more than two-thirds of all flood insurance policies are written in the 900 CRS communities.

Communities receiving premium discounts through the CRS cover a range of sizes from small to large and a mixture of flood hazard risks, including risks associated with coastal flooding and those linked to flooding along rivers. Property owners who purchase Preferred Risk Policies do not receive premium rate credits because their decreased exposure to loss already is reflected in lower premiums than other NFIP policies.

Similar to fire insurance, the CRS uses a community class rating system to determine premium reductions for residents. CRS classes are rated from 10 to 1, with almost all communities entering the NFIP at a Class 9 rating that has a 5% premium discount. Credit points are assigned to 18 floodplain management activities that have helped to alleviate the pain, suffering and financial hardship caused by floods. These activities are organized into four categories: public information, mapping and regulations, flood damage reduction, and flood preparedness. Some activities, such as acquisition of floodprone property and relocation of buildings that have suffered repeated flood damage, score up to 3,200 points. But there are many other less costly activities a community can undertake, such as implementation of a flood warning program, earning up to 200 points, or establishment and maintenance of a flood protection library, receiving up to 30 points.

Participation in the CRS is voluntary. Any community that is in full compliance with NFIP rules and regulations may apply for a CRS classification better than a Class 10. To do this, the community appoints a CRS coordinator to handle the application work and serve as liaison with FEMA. Next the community obtains a copy of the *CRS Coordinator's Manual*, which describes the program and gives details on the eligible activities. An application is submitted to the appropriate FEMA Regional Office along with documentation that the community is doing activities recognized

by CRS. Technical assistance from specially trained field representatives is available for communities that request it. After conducting a field verification of the activities described on the application, the CRS arranges for NFIP flood insurance premium discounts to be implemented.

The *CRS Coordinator's Manual*, additional CRS publications and software may be ordered by writing, calling or faxing a request to the NFIP/CRS. All publications and the computer software for completing the application are available at no charge to NFIP communities.

In January 1999, a number of changes were made to the CRS. The application, scoring and documentation procedures were simplified. Substantial increases were made in the maximum number of points available for mapping and regulating the floodplain, for preserving open space, and for acquiring, relocating or retrofitting floodprone properties. Credit also was increased for actions taken to mitigate repetitive losses. Recognition was given for communities that design programs tailored to their local flood risk exposure. Emphasis also was placed on having and enforcing a state or nationally recognized building code (see p. 17). The CRS program provides support for Project Impact and similar mitigation programs. In addition, officials of non-CRS communities are encouraged to

join, and officials from communities already participating in the CRS are encouraged to engage in activities that will improve their class. All officials are encouraged to use a multi-hazards approach to planning.

There are many compelling reasons for a community to join the CRS - a program that not only saves money, but also saves lives and preserves property. However, according to Richard Decker who chairs the CRS Task Force which oversees the program's operation, "... the most important aspect of the CRS process is that we give local folks the confidence that they can pull themselves up by their bootstraps and help themselves. Actions taken by CRS communities benefit everybody, whether insured or not. Sometimes people lose sight of that fact. While less than 10% of the residents in some communities may actually buy flood insurance, the other 90% benefit when the community participates in CRS recommended mitigation activities. From a community's point of view, mitigation and related activities are the meat and potatoes of the CRS. The premium discount is the sweet dessert."

\*Reprinted from the National Flood Insurance Program Spring/Summer 2000 issue of *Watermark*, a publication of FEMA. The current issue and selected back issues of the *Watermark* are available at [www.fema.gov/nfip/wm2.htm](http://www.fema.gov/nfip/wm2.htm).

## What is a RCBAP?\*

RCBAP, the Residential Condominium Building Association Policy, is a Standard Flood Insurance Policy issued pursuant to the National Flood Insurance Act of 1968. It was developed specifically for condominium associations and their unit owner members. (A residential condominium building means that at least 75% of the floor space is residential occupancy.)

The RCBAP allows condominium associations to buy flood insurance protection and may, to a degree, relieve unit owners of their responsibility to individually insure their units. (See comments below about individual coverage for condominium dwellers.) RCBAP coverage eliminates the often confusing issue of determining who owns, or is responsible for, property in common areas such as lobbies, maintenance rooms and pool areas.

### **Who can buy a RCBAP?**

Only the condominium association, not individual property owners, may buy property insurance to cover the entire condominium. The maximum amount of insurance available under the RCBAP is equal to the number of units being covered multiplied by \$250,000. This means that, if the amount of coverage purchased by the condominium association *does not* cover the entire cost of each unit, some unit owners may want to consider getting extra flood insurance to cover their investment. This additional coverage is available through the Dwelling Form of the Standard Flood Insurance Policy. However, since the maximum amount the NFIP can pay out for an individual unit is \$250,000, if the condominium building is insured to the maximum of \$250,000 times the number of units, a Dwelling Form would not come into effect.

## **What about contents coverage?**

Each unit owner may want to buy a flood policy to cover personal contents in the unit if there is a chance of floodwaters entering the living space. This coverage is also available through the Dwelling Form.

### **What about deductibles?**

Buildings constructed in Special Flood Hazard Areas before a Flood Insurance Rate Map was issued for the area are subject to a deductible of \$1,000 for each structure in SFHA flood zones A, AH, AO, A1-A30, AE, AR, AR/AE, AR/AO, AR/A1-A30, V1-V30, VE and V. For all other flood zones, A99, B, C, D, and X, and for elevation-rated structures located in SFHAs, the deductible is \$500. There is an additional deductible of \$250 that is applied separately for each building and contents loss for land subsidence, sewer backup, or seepage of water.

### **What does a RCBAP cover?**

As with other Standard Flood Insurance Policies, the RCBAP does not cover certain items, including but not limited to, money, valuable papers such as business documents, deeds and stocks. Only the building or areas within the building as specifically stated in the association's bylaws are covered, i.e. no fences, retaining walls, seawalls, docks, or bridges, no animals, trailers on wheels or additional buildings on the property, although additional buildings can be covered under a secondary policy.

Finally, as with any policy, the RCBAP should be checked for the complete list of covered and noncovered items; and particular attention should be paid to the NFIP definitions for flood-related terms. Some are defined in very specific ways in accordance with the language of authorizing legislation.

\*Reprinted from the National Flood Insurance Program Spring/Summer 2000 issue of *Watermark*, a FEMA publication.

# Recent Changes to the Stafford Act

by Shirlee Gonsolis, State Office of Emergency Services, Hazard Identification and Analysis\*

Congress approved the “Disaster Mitigation Act of 2000” on October 10, 2000 and President Clinton signed it into law on October 30th (Public Law 106-390). Some of the key provisions follow.

**Pre-Disaster Mitigation Program:** A program similar to the current Project Impact initiative is authorized. A National Pre-Disaster Mitigation Fund and minimum funding level of fund was established. Allows the Governor of each State to recommend to the President not less than five communities to receive pre-disaster mitigation funds. The Federal Emergency Management Agency approves funding at 75% (or up to 90% for Small Impoverished Communities). Recipients can use up to 10% of the total award for the dissemination of information.

**Interagency Task Force:** Echoing concerns that mitigation must yield long-term and measurable benefits, FEMA is required to submit a report within 18 months of enactment to evaluate implementation efforts. FEMA will chair an interagency task force to coordinate implementation of the program.

**Mitigation Planning:** Requires the State to develop a statewide mitigation plan that includes provisions for prioritizing mitigation activities. Places requirement for local planning on local governments and tribes. Specifically authorizes that 7% of Hazard Mitigation Grant Program funds are to be available to states for mitigation planning. This amount appears to be in addition to FEMA's current policy that gives states flexibility in how up to 5% is used.

**Minimum Standards for Public and Private Structures:** Restates requirement for recipient of disaster loan or grant under this Act to meet applicable codes and standards; provides for Presidential requirement of safe land use and construction practices and al-

lows for the requirement to provide evidence of such compliance.

**Hazard Mitigation Grant Program Funding Amount:** In an endorsement of mitigation efforts across the country, in certain instances Congress authorized increasing the amount to be available for the HMGP from 15% to 20% of the total disaster cost. This increase is dependent on an approved state, local government and/or tribal mitigation plan.

**Managing State:** Establishes in law the State Management concept for the HMGP. Allows FEMA to delegate the HMGP to qualified States, although the bill is silent on the NEPA provisions that seem to cause the most delay for many projects.

**Public Assistance (Section 406):** Reduces the federal share of assistance to an eligible public facility or private nonprofit facility that has been damaged on more than one occasion in a ten-year period if the owner has failed to implement appropriate mitigation measures to address the hazard. Authorizes the eligible cost of repair, restoration, reconstruction, or replacement to be based on cost estimates rather than actual costs incurred.

**In-lieu contributions:** Modifies how large in-lieu contributions are allowed if the owner of a damaged facility decides to demolish rather than repair it. In this case, the amount of federal funding is determined to be only 75% of the federal share that would be available if the facility was repaired or restored. Notably, these “in-lieu contributions” can be used to repair, restore, expand or mitigate other facilities, but not other facilities that are in a floodway or that are in a mapped flood hazard area and are not insured for flood damage.

**Individual Assistance (Section 408 & Section 411):** In essence, eliminates the Temporary Housing Assistance (Section 408) and repeals the Individual and Family Grant Programs (Section 411) and rewrites them into a new Federal Assistance to Individuals and Households Section 408. Maximum amount



of assistance to a single household reduced under this combined program to \$25,000. Limits the amount of assistance to replace a destroyed primary residence to \$5,000.

**Miscellaneous Changes:** Provides federal benefits for FEMA, state, local, or tribal emergency management personnel injured or killed while performing official duties in coordination with FEMA. Adds Disaster Grant Closeout Procedures to the Act.

\*[Excerpted from an article on the Stafford Act by Rebecca Quinn, ASFPM Legislative Officer for "The Insider", a publication of the Association of State Floodplain Managers, Inc.]

## DWR Workshops Approved for Continuing Education Credits!

ASFPM has pre-approved DWR workshops for Continuing Education Credits. This should be of interest to anyone that has become a Certified Floodplain Manager through ASFPM. As a requirement for continued certification, 16 Continuing Education Credits must be acquired over a two-year period with a maximum of 12 in any given year.

The credits the Department was awarded are:

- 6.5 Core Credits for Floodplain Management and Duties of the Local Floodplain Administrator
- 3.75 Core Credits for Substantial Improvement and Substantial Damage
- 3.75 Core Credits for the FEMA Elevation Certificate.

## The *Floodlight's* Frequent Initials Use List

To avoid repetitious identification of initials used frequently in several articles and/or in most issues of the *Golden State Floodlight*, we will publish this list with necessary additions, once each issue. The list will be placed as close to the front or back page as the issue layout will allow. Uncommonly used initials will be explained with the accompanying article.

ASFPM - Association of State Floodplain Managers [national assoc.]

BFE - Base Flood Elevation

CAV - Community Assistance Visit

CFM - Certified Floodplain Manager

CRS - Community Rating System

DWR - Dept. of Water Resources

FEMA - Federal Emergency Management Agency

FIA - Federal Insurance Administration

FIRM - Flood Insurance Rate Map

FMA - Floodplain Management Association

FPA - Floodplain Administrator

FPM - Floodplain Management

HMGP - Hazard Mitigation Grant Program

HUD - Dept. of Housing & Urban Development

IBC - International Building Code

NEPA - National Environmental Protection Act

NFIP - National Flood Insurance Program

NGVD - National Geodetic Vertical Datum

PMF - Probable Maximum Flood. (Defined by USACE as "The largest flood that can be expected from the most severe combination of critical meteorological and hydrological conditions possible in a region.")

SFHA - Special Flood Hazard Area

### ***The Golden State Floodlight***

CA Dept.of Water Resources  
Floodplain Management Branch  
1416 Ninth Street, Rm. 1623  
Sacramento CA 95814

*Please*, let us know when you are moving (or have already moved) & include the label ID number by e-mail to [mlorenzo@water.ca.gov](mailto:mlorenzo@water.ca.gov) or a copy of this label with your notice by mail to the address above. *Thank You!*



## DWR Is Recruiting

The Department of Water Resources is recruiting Civil Engineers. Individuals with a degree in Civil Engineering, or closely related engineering fields, are encouraged to apply. Positions are available from the entry to journey level. There are excellent training, medical, dental and retirement benefits. For details about the positions available, contact either Ricardo Pineda at 916-653-5440, e-mail [rpineda@water.ca.gov](mailto:rpineda@water.ca.gov), or Anna Hegedus at 916-654-3896, e-mail [ahegedus@water.ca.gov](mailto:ahegedus@water.ca.gov).